Severe Thunderstorms

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Why are thunderstorms dangerous?

Thunderstorms can produce: Tornadoes, Lightning, Strong winds, Flash Floods, and Hail. Of the estimated 100,000 thunderstorms that occur each year in the United States, about 10% are classified as severe.

Tornadoes

Before thunderstorms develop, a change in wind direction and an increase in wind speed with increasing height create an invisible, horizontal spinning effect in the lower atmosphere. Rising air within the thunderstorm updraft tilts the rotating air from horizontal to vertical. An area of rotation, 2-6 miles wide, can extend through much of the storm. A tornado specifically is a violently rotating column of air extending from a thunderstorm to the ground. They may appear nearly transparent until dust, debris, or cloud formations are seen within the funnel.

Lightning

Lightning results from the buildup and discharge of electrical energy between positively and negatively charged areas. Rising and descending air within a thunderstorm separates these positive and negative charges.

A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

Did you know…

- Lightning occurs in all thunderstorms
- Lightning can occur from cloud-to-cloud, within a cloud, cloud-to-ground, or cloud-to-air

What's the difference between a watch and a warning?

A **watch** means that certain weather is possible during the next few hours, while a **warning** means that certain weather has been observed, or is expected soon.

- Severe Thunderstorm Warning means: 1 inch, or larger, hail and/or 58 mph, or stronger, (damaging) wind. (Watches and warnings are NOT issued for lightning. This is because all lightning is potentially fatal and all thunderstorms have lightning).
- Tornado Warning is issued when a tornado is indicated by Doppler radar or sighted by spotters.

What to do when caught outside during a thunderstorm

There is no safe place outside during a thunderstorm. Plan ahead to avoid this dangerous situation!

- Avoid open areas and stay away from isolated tall trees, towers, or utility poles. Also stay out of dugouts.
- Stay away from metal conductors such as wires or fences.

How far away is a thunderstorm?

- Count the number of seconds between a flash of lightning and the next clap of thunder.
- Divide this number by 5 to determine the distance to the lightning in miles.

Straight-Line Wind

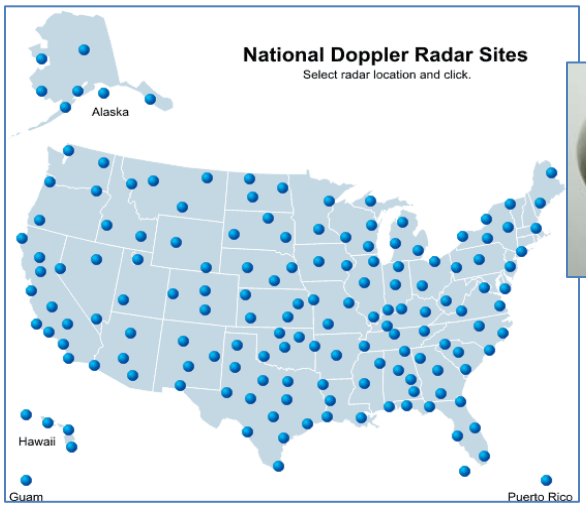
Straight-line winds are responsible for most thunderstorm wind damage. These winds can exceed 100 mph! One type of straight-line wind, called a downburst, is a small area of rapidly descending air beneath a thunderstorm. A downburst can cause damage equivalent to a tornado and can be extremely dangerous to aviation. A “dry microburst” is a downburst that occurs with little or no rain. These destructive winds are most common in the western United States.

Flash Floods/Floods

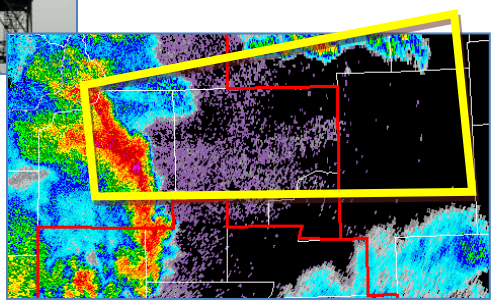
Flash floods and floods are the number one cause of deaths associated with thunderstorms...more than 140 fatalities occur each year. Most flash flood fatalities occur at night and most victims are people who become trapped in automobiles. Six inches of fast-moving water can knock you off your feet; a depth of two feet will cause most vehicles to float.

Large Hail

Strong rising air within a storm, called updrafts, carry water droplets to a height where freezing occurs. Ice particles grow in size, becoming too heavy to be supported by the updraft and fall to the ground. Large hail stones can fall at speeds greater than 100 mph and reach diameters over a half a foot, causing substantial property damage and potential for injury or even loss of life in extreme cases.



Weather Radar Watches the Sky



The National Weather Service utilizes a nationwide network of strategically located Doppler radars to detect air movement in and near thunderstorms. Early detection of storm development aloft within a thunderstorm can allow life-saving warnings to be issued before a tornado develops or damaging winds and hail reach the ground.

Safety Tips

1. Stay alert of weather in your area.
2. As a thunderstorm approaches, seek shelter in a sturdy building and avoid using electrical devices.
3. If a tornado approaches, seek shelter in lowest level of a sturdy building with as many walls and least amount windows between you and outside.
4. In case of high water, do not drive through flooded roadways! *“Turn around, don’t drown.”* Get to higher ground.

On the web:

National Weather Service Quad Cities ..... www.weather.gov/quadcities
National Weather Service ..... www.weather.gov
Red Cross Preparedness ..... www.redcross.org
FEMA ..... www.fema.gov